

SPRING 2018

NIH MedlinePlus

MAGAZINE

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U.S. Surgeon General and Vice Admiral Jerome M. Adams, M.D., M.P.H., met with NLM Director Patricia Flatley Brennan, R.N., Ph.D., earlier this year.

Surgeon General Adams Outlines Opioid Plan at NLM

This February U.S. Surgeon General and Vice Admiral Jerome M. Adams, M.D., M.P.H., discussed his priorities for public health in the U.S. at the National Library of Medicine (NLM). On the top of his list is the country's opioid epidemic.

Often called “the nation’s doctor,” the surgeon general’s role is to provide Americans with the best scientific information available on improving their health and reducing the risk of illness and injury.

Speaking to NLM Director Patricia Flatley Brennan, R.N., Ph.D., NLM’s Board of Regents, and NLM staff, Dr. Adams said the opioid epidemic is cutting too many American lives short.

“Ninety-one Americans die every day from some kind of opioid abuse,” he said.

Surgeon General Adams told NLM that confronting the problem in the U.S. will require a multi-part strategic plan including:

- Improving Americans’ access to prevention, treatment, and recovery services
- Targeting availability and distribution of overdose-reversing drugs
- Strengthening public health data and reporting
- Providing support for cutting-edge research on pain and addiction
- Advancing the practice of pain management

Clear communication, with the public and between government agencies, is also key.

“We need to get better at the science of communication,” Dr. Adams said. “One poll shows that over half of Americans don’t believe there is a treatment that works for opioid addiction.”

NIH is helping the surgeon general in the fight against opioids. In April 2017, NIH launched an opioid initiative with other government agencies and the private sector. Building on that effort, this spring NIH announced the HEAL (Helping to End Addiction Long-term) Initiative, an aggressive, trans-agency effort to speed scientific solutions to address the crisis. NIH is also increasing opioid research funding to \$1.1 billion in fiscal year 2018 thanks to congressional funding support.

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inside

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WHO WE ARE

The National Institutes of Health (NIH) is the **nation's premier medical research agency**, with 27 different institutes and centers. The National Library of Medicine (NLM) at NIH is the world's largest medical library.

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Leeza Gibbons (pictured with her mom) opens up about personal caregiving experience and advocacy.

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NEWS,
NOTES,
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FROM NIH

Cholesterol: The Good, the Bad, and the Unhealthy

HEALTH TIPS We hear about cholesterol in the news, in diets, and on advertisements. But what exactly is it?

Cholesterol is a type of fat in our bodies. It helps us do a lot of things: build cells, digest food, and make hormones.

While cholesterol is needed for our body to function properly, too much of it can be bad. High cholesterol can cause serious problems in our blood, like clots, plus heart and brain issues.

MedlinePlus has released new health topic pages on cholesterol, such as “How to Lower Cholesterol with Diet,” to help you better understand and control your cholesterol.

This Q and A features tips from the National Heart, Lung, and Blood Institute and MedlinePlus.

What is good cholesterol?

There are two main types of cholesterol: “good” and “bad.”

“Good” cholesterol is also known as HDL cholesterol. It’s “good” because it takes cholesterol from the tissues and blood to the liver, removing it from your body.

A low level of HDL cholesterol increases your risk for heart disease.

What is bad cholesterol?

LDL, which also is called “bad” cholesterol, carries cholesterol to tissues, including the arteries. Most of the cholesterol in our blood is the LDL form.

You want to keep your LDL levels low. If not, bad cholesterol can create buildup in your arteries, known as plaque.

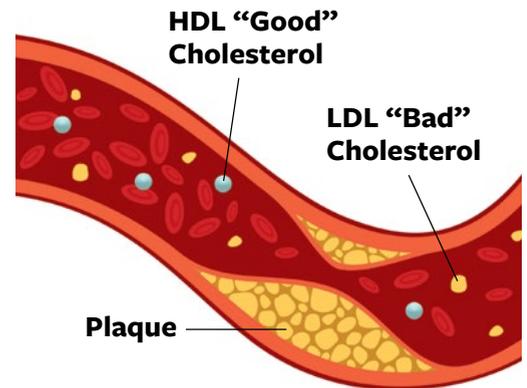
Plaques make it harder for blood to flow to your heart, creating heart problems. These include chest pain and heart attacks. Plaques can also lead to blood clots in the brain and legs.

What causes high cholesterol?

An unhealthy lifestyle can contribute to high cholesterol. Your genes (family history) and some medicines you take can also contribute to it. Diseases that affect your thyroid gland and kidney function can also increase cholesterol levels.

What is a healthy cholesterol level for me?

In general if you are 19 years old or younger, your total cholesterol levels



should be less than 170 milligrams per deciliter (mg/dL) of blood.

If you are 20 years old or older, your total cholesterol should be less than 200 mg/dL.

These are general recommendations, so make sure to talk to your health care provider to find out what’s considered healthy for you.

How can I lower my bad cholesterol?

Eating healthy, being physically active, quitting smoking, and managing stress can help lower your cholesterol.

You may also need medicine if lifestyle changes aren’t enough. ■

SOURCES: MedlinePlus: Cholesterol; National Heart, Lung, and Blood Institute: Cholesterol

IMAGE: ISTOCK

Preventing Pregnancy with a Gel for Men?

RESEARCH This June the largest effort in the U.S. to test a new hormonal male contraceptive starts—with support from NIH.

Contraceptives help prevent pregnancy. Currently condoms and a vasectomy are the most effective male contraceptives.

The new clinical trial is testing a contraceptive gel that men rub on their arms and shoulders daily to reduce sperm count.

The trial is led by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development. It runs until 2022.

Interested in participating in the contraceptive trial? Visit ClinicalTrials.gov to see if there's a trial site near you. ■

SOURCES: MedlinePlus: Contraceptives; Eunice Kennedy Shriver National Institute of Child Health and Human Development: Contraceptives

DID YOU KNOW?

Correct usage of latex condoms greatly reduces, but does not completely eliminate, the risk of catching or spreading STDs.



SOURCE: MedlinePlus: Contraceptives

Combating HIV/AIDS

HIV: human immunodeficiency virus

AIDS: acquired immunodeficiency syndrome

BY THE NUMBERS Even though the number of AIDS-related deaths worldwide has dropped dramatically—by nearly 50 percent since 2005—1 million people still died from AIDS-related illnesses in 2016.

The number of annual new infections of HIV, the virus that causes AIDS, remains high. In the U.S., HIV is spread mainly by having sex or sharing injection drug equipment, such as needles, with someone who has HIV. HIV can also spread from a mother to her newborn during pregnancy, childbirth, or breastfeeding.

NIH and the National Institute of Allergy and Infectious Diseases (NIAID) are committed to better understanding HIV and developing new tools to prevent HIV, including a vaccine, developing more effective treatments for people living with HIV, and hopefully, finding a cure.



1.2M / U.S. 37M / WORLD

Nearly **37 million people around the world** and **1.2 million people in the U.S.** are living with HIV.



160,000

children around the globe became infected with HIV in 2016.



13 percent

of people with HIV in the U.S. **do not know they have it.**

48%

AIDS-related deaths have **dropped by 48 percent** globally since their peak in 2005.

1.8M

HIV incidence remains high: **1.8 million new infections** occurred worldwide in 2016.

SOURCES: MedlinePlus: HIV/AIDS; National Institute of Allergy and Infectious Diseases: HIV/AIDS; The Joint United Nations Programme on HIV/AIDS

Ruff! Are Pets Good for our Health?



Marguerite E. O’Haire, Ph.D., is studying how service dogs can help veterans.

RESEARCH Guinea pigs, fish, dogs, and horses: What do these animals have in common? They may have an impact on our health.

Since 2008, NIH has studied how these animals affect our health—from reducing anxiety to helping us remember to take medicine.

“People have been interested in human-animal interaction for hundreds of years but the science has only started blossoming in the past few decades,” said Layla Esposito, Ph.D. “There are a lot of stories about the relationships between humans and pets, but there are still a lot of unanswered questions.”

Dr. Esposito and her team are trying to answer those questions. She oversees the human-animal interaction research portfolio at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD).

What we know

Although trials may help uncover or confirm health benefits from our pets, there are some things we already know. For example, animals can bring people companionship and help us get more physical activity.

“We know that when you’re playing with a dog or taking it for a walk, you’re obviously increasing physical activity,” Dr. Esposito said.

Stress and anxiety

Another popular area of human-animal interaction research looks at how pets can reduce stress and provide

emotional support.

Marguerite E. O’Haire, Ph.D., and her team at Purdue University are funded by the program. They studied if playing with guinea pigs in the classroom helps children with Autism Spectrum Disorder feel calmer and more engaged in social interactions. Their findings? They do.

Now Dr. O’Haire is exploring how service dogs can help veterans. Specifically, how dogs can improve the quality of life for veterans and their families who suffer from post-traumatic stress disorder following military service.

“Through my NICHD grants, it has been exciting to capture data on areas that have historically relied on emotional intuition rather than objective science,” Dr. O’Haire said.

Safety first

The human-animal interaction program studies more than just health. The program also looks at the safety of human and animal participants.

One ongoing study wants to see if dogs can reduce stress, loneliness, and anxiety in children with cancer. Researchers also want to know if the dogs compromise the children’s immune systems during these visits.

“It could open up the doors for hospitals to start letting therapy dogs onto cancer wards, which would be really exciting,” Dr. Esposito added.

NIH’s Clinical Center—the country’s largest research hospital—already uses therapy dogs to comfort some patients during their stays.

DID YOU KNOW?

NIH's Clinical Center has **14 teams of volunteer therapy dogs** for patients at the research hospital.



Other animals

In addition to dogs and guinea pigs, NIH research has studied how riding horses can help children with developmental disabilities. It's also researched how feeding fish on a set schedule helps teens to better manage their type 1 diabetes.

Dr. Esposito said she hopes to see more research on our favorite feline friends, cats, since they are popular pets.



Becoming a human-animal interaction researcher

While human-animal interaction research is expanding, it's still a unique, smaller field.

Dr. O'Haire has one of the few research positions in the country solely dedicated to studying how animals interact with humans.

"I have always been interested in studying both animals and psychology, so this field is the perfect intersection of those interests," she said. Her advice for young people interested in this or other research careers: find a mentor.

"I would recommend finding a mentor. Whether the mentor is focused on human-animal interaction or related fields, mentorship can be critical to navigating the pathway to successful career development," Dr. O'Haire said. ■

SOURCES: NIH News in Health: Power of Pets; NIH Clinical Center Animal Care Program

Fighting the Flu with a Universal Vaccine

RESEARCH After a serious 2017–2018 flu season, development of a universal vaccine has become more important than ever.

Seasonal flu (or influenza) vaccines are made each year to best match the three to four strains expected to be most prominent that season. A universal vaccine would last for at least one year and be protective against a broader group of flu strains for all age groups. A universal vaccine also could prevent new, emerging strains better than existing vaccines.

NIH's National Institute of Allergy and Infectious Diseases (NIAID) is leading the charge to develop a universal flu vaccine.

Now they are one step closer. NIAID and its partners consulted experts from across the globe to create a strategic plan guiding the development of a universal vaccine. Multiple candidates have already been developed and testing is now underway.

A vaccine is the best way to reduce your chances of getting the flu and spreading it to others. For more than 50 years, hundreds of millions of Americans have safely received seasonal flu vaccines.

The universal vaccine should:

- Protect against multiple flu strains
- Be 75% effective
- Have durable protection that lasts at least one year
- Be effective for all ages
- Prevent against new, emerging strains better than the current vaccine ■



SOURCE: National Institute of Allergy and Infectious Diseases: Universal Flu Vaccine



Taboo, pictured above with his family, and to the right with fellow Black Eyed Peas band members will.i.am and apl.de.ap.

Translating Music into Hope

Black Eyed Peas' Taboo talks about his cancer battle

Grammy Award winning musician Jimmy Luis Gomez, better known as Taboo, has been thrilling audiences for years as a member of the hit music group Black Eyed Peas. He shares his recent experience battling testicular cancer and discusses the important role of early detection, research, and music in fighting the disease. This interview first appeared in the 2017 issue of NIH MedlinePlus Salud. It has been updated and shortened for space.

Tell us about your cancer diagnosis.

I had chronic back pain for six years. Because we move and dance a lot in our performances, I thought it was due to chronic wear and tear of touring with the band, so I just lived with it.

But the pain gradually increased and spread from my back to my abdomen. It became so painful that one night I reached my breaking point.

I went to the emergency room where they did tests. The next morning, the doctors told me they found a large mass and that I had stage 3 testicular cancer. They said I needed to have surgery to remove it or it could spread to my lungs and brain, and I could die.

I went into shock. I have a wife and little ones. The first thing I thought was, “Am I going to live”? The next day I went into surgery and had the procedure to remove it, but that was just the beginning of the battle.

What specific tests were used to diagnose your cancer?

In the hospital they did an MRI, a CT scan, and other tests. The next morning they told me they had found a mass 4 centimeters wide and 4 centimeters long. And it was cancer.

Why have you have been vocal about early detection?

Early detection is key, especially in my communities—the Native American and Latino communities—that can often be overlooked. It is important to go and get checked. People need to know to listen to your body and go to the



“Early detection is key, especially in my communities—the Native American and Latino communities—that can often be overlooked.” - Taboo

doctor to make sure you are OK. No matter whether it is a pain or a lump, it should be checked out. I want to tell people that if it happened to me, it can happen to anyone. It can happen to a 3-year-old, a 38-year-old, or an elder.

What is your message to others who are facing cancer?

The message is simple: You are not alone. I am one of you; you are one of me. I went through a very harsh, intense, and aggressive chemotherapy experience. There were moments, to be honest, that I wanted to give up. But I got encouragement to stay strong. I had my family, friends, and bandmates. Everyone was very supportive. ■

Finding Better and More Personalized Ways to Diagnose Cancer at NIH

Cancer imaging tools help improve detection

Cancer treatment is constantly evolving and so are the detection tools that help diagnose it.

The National Cancer Institute’s (NCI) Cancer Diagnosis Program focuses on creating newer and better tools to detect and diagnose cancer.

The program supports research at medical centers, hospitals, businesses, and universities throughout the U.S. It provides resources and research for the development of new detection technologies. This helps improve medical decision-making and patient treatment.

Detecting cancer

If you have symptoms or a screening test that suggest cancer, your health care provider will dig deeper.

Before using imaging and other diagnostic tools, he or she will first ask about personal and family medical history and do a physical exam. Additionally, your provider may have you do a lab test.

Lab tests

High or low levels of certain substances in your body can be a sign of cancer. Blood, urine, and other lab tests measure these substances to help doctors make a diagnosis.

However, abnormal lab results are not a sure sign of cancer. Lab tests are an important tool, but doctors cannot rely on them alone to diagnose cancer.

That’s where diagnostic tools, such as imaging, come in.

Diagnostic tools

A promising field of cancer research explores imaging technologies, which take pictures inside the body and help diagnose some trickier cases of cancer.

Imaging can also help health care providers confirm cancer diagnoses from more traditional methods—like biopsies—and see if cancer has spread to other parts of the body.

Prostate cancer

One of the newest clinically approved tools is a prostate imaging tool called Axumin.

It can be used to detect cancer at the cellular level and can help improve the accuracy of prostate cancer diagnoses, according to Janet Eary, M.D. Dr. Eary is deputy associate director of NCI’s Cancer Imaging Program.

Axumin is especially helpful in detecting prostate cancer that has returned. When cancer comes back, tumors are often smaller and harder to see. Axumin is used in what’s known as PET (positron emission tomography) imaging. For PET imaging, health care providers inject you with a tracer.

A tracer is a small amount of radioactive material that flows through your bloodstream and collects in certain body



Imaging “can help us select therapies that are really aimed at individual patients.”

- Janet Eary, M.D.

tissues. The radioactive imaging material decays quickly so your body gets rid of it fast.

The PET machine then makes 3-D pictures showing where the tracer collects in the body. These scans show how your organs and tissues are working.

Imaging and personalized medicine

PET images provide information about the function and biochemical activity of the body’s tissues, unlike other imaging techniques such as computed tomography (CT) or magnetic resonance imaging (MRI). They mostly show the body’s anatomy and structure.

Imaging techniques like PET help show how our body tissues function or if they have disease. Each set of images is unique to the individual patient.

This supports NCI’s and NIH’s goal of precision medicine, which aims to make patient treatment more individualized.

“Imaging fits into precision medicine efforts in cancer,” Dr. Eary said, adding that it “can help us select therapies that are really aimed at individual patients.” ■

A Closer Look at Cancer Imaging Tools



X-ray

Imaging procedures create pictures of areas inside your body that help your health care provider see whether cancer is present. They can also show if certain cancer treatments are working.

Before getting an imaging procedure, make sure to talk with your health care provider about whether the procedure is necessary and its risks and benefits.

Some imaging procedures can also cause cell damage that leads to cancer. However, the risks of cancer from these medical procedures are very small, and the benefit from having them is almost always greater than the risks.

Imaging tools to help diagnose cancer include:

X-ray: X-rays use low doses of radiation to create pictures of the inside of your body.

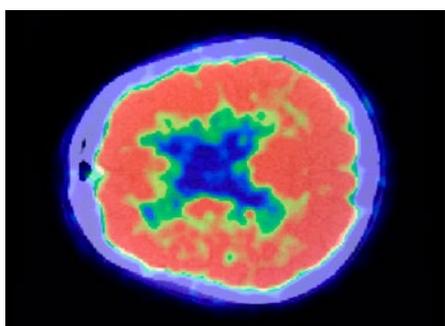
PET (positron emission tomography) imaging: PET imaging uses a tracer, which is a small amount of radioactive material that flows through your bloodstream. It collects in certain tissues. A scanner then makes 3-D pictures that show where the tracer collects in the body. These scans show how your organs and tissues are working and if disease is present. Your body gets rid of the radioactive substance quickly.

CT (computed tomography) scan: CT scans use an X-ray machine linked to a computer that takes a series of detailed pictures of your organs. You may first receive a dye or other contrast material (which is injected or ingested) to highlight areas inside the body. Contrast material helps define the appearance of some of the body areas and disease.

Ultrasound: An ultrasound is a sound wave that people cannot hear. The waves bounce off tissues inside your body. During an ultrasound, a health care provider will use a probe on your skin to detect the echoes and a small scanner to create a picture of them. This picture is called a sonogram.

MRI (magnetic resonance imaging): MRIs use a strong magnet linked to a computer to make detailed pictures of your body. You may first receive a dye or other contrast material (which is injected or ingested) to highlight areas inside the body. Contrast material helps define the appearance of some of the body areas and disease. Your health care provider can view these pictures on a monitor and print them on film.

Nuclear scan: Like PET scans, nuclear scans also involve a radioactive tracer that is injected into your bloodstream. This material then collects in certain body tissues. A machine called a scanner detects and makes a computer picture of the body sites where the tracer goes after it is injected. Your body gets rid of the radioactive substance quickly. ■



PET scan



Ultrasound



MRI

SOURCES: National Cancer Institute; Imaging; NIH Clinical Center: Procedures/Diagnostic Tests

2-D or 3-D Mammography?: The Future of Breast Cancer Detection

NIH-supported clinical trial tests diagnostic imaging tools

A new trial may be the answer for finding breast cancer in women who don't have symptoms.

The trial will test two types of imaging tools—2-D and 3-D mammography.

2-D mammography takes pictures from two sides of the breast to create a flat image. 3-D mammography takes images from different angles around the breast and builds it into 3-D-like image.

The study is now open for enrollment. It's led by the ECOG-ACRIN Cancer Research Group in collaboration with the National Cancer Institute (NCI).

Researchers are looking for healthy women ages 45 to 74 who are already planning to get routine mammograms.

Participants will help researchers learn how to best scan patients for breast cancer. It will also help women make more informed decisions about the screening tests in the future.

“Nearly 50 million screening mammograms occur each year in the U.S., yet it has been decades since a large-scale randomized trial of mammography has been done,” said Wortia McCaskill-Stevens, M.D.

Dr. McCaskill-Stevens is the director of NCI's Community Oncology Research Program, which supports the trial.

“The evolution of mammography technology provides us with an opportunity to fill in the gaps in our knowledge about two available breast cancer screening tests,” she added. ■



Participants will provide critical information that will help researchers learn how to best scan patients for breast cancer.

Medical Scans at Your Fingertips



Want to see what a CT scan looks like?

NIH's Understanding Medical Scans mobile app can help.

The app provides easy-to-navigate images and videos of five popular medical scans and explains how they work, potential risks, and more.

It's available for free download on the Apple Store and Google Play. ■

SOURCE: National Institute of Biomedical Imaging and Bioengineering: Medical Scans

Caregiving



Isn't a Solo Sport

Leeza Gibbons Shares Advice and Lessons Learned

Leeza Gibbons is a leading TV talk show host, entertainment reporter, and best-selling author, but she has another role: caregiver. Gibbons cared for both her mother and father during serious illnesses. She shares advice for other family caregivers and explains how research and resources—like those at NIH—can help.

Tell us about your caregiving journey.

I'm the middle child in our family, accustomed to negotiating and finding solutions. My mother's Alzheimer's disease changed all that.

Like most caregivers, it's not like anyone sent me a greeting card welcoming me into the club. I thought I would aggressively wrestle it and refuse to allow it to take my beautiful relationship with my mother away. Ultimately, it gave me a new and differently beautiful way to relate and respond to her.

I'm grateful that my journey with Mom and our family's difficult path gave me the inspiration to create my nonprofit Leeza's Care Connection, where we help families cope with support, tips, and strategies.

When Dad had a heart attack and bypass surgery, I was more aware of my important role in his recovery through advocacy and hands-on care and coordination. By then I had years of experience working with and learning from care partners who managed to be optimistic and resilient.

How did caregiving impact your family?

We were lucky. My dad, my siblings, and I were all on the same page about how to care for mom. My mom made

certain of that. She gave us marching orders in the early stage of her Alzheimer's, which was so courageous of her and quite a blessing for us.

Still, we each felt lost and alone. We were overwhelmed at times by sadness and grief. It was only through frequent communication that we ultimately kept it all together. We learned to accept each other's individual journeys and emotional limits.

Blame, shame, guilt, and resentment are common by-products of caregiving. We managed to keep them at bay by being real with each other and creating a safe place for differences.

What are your top three messages for other family caregivers?

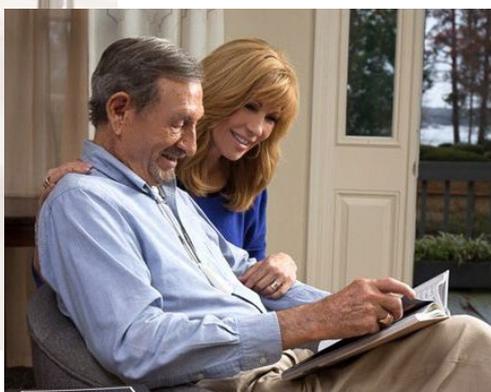
Our country's family caregivers are a heroic and a treasured resource. But families can head toward a cliff of exhaustion, depletion, frustration, anger, and resentment if they try to go it alone. Caregiving is not a solo sport.

1. Identify who's on your team. Delegate, forgive, regroup, and repeat. Learn to ask for help and receive it. Accept that sometimes "good enough" is the goal. Tomorrow is a new day to try again.



“Taking better care of yourself will translate to better outcomes for your loved one. So take your oxygen first with no guilt or apologies.”

-Leeza Gibbons



Leeza with her mom (top right) and dad (bottom right).

2. Use technology. From online therapy to care calendars, there is a steady stream of high-tech assistance to support this journey. Things like automated medication dispensers, personal emergency response systems, and guided meditation resources can be a huge help for caregivers and patients.

3. Rest and recharge. This is not optional. Taking better care of yourself will translate to better outcomes for your loved one. So, take your oxygen first with no guilt or apologies.

What caregiving resources do you recommend?

The research and resources provided by NIH are true lifelines for caregivers who often feel at the end of their ropes.

Many times, knowing there are people who “get you” can help you unpack the emotional baggage that comes with caring. The resources offered by NIH, which include help on everything from dealing with your emotions to finding support, are like lifeboats helping you stay afloat in a sea of overload. ■

Caregiving: It Takes a Village

NIH caregiving resources help patients and their families

Do you remind a family member or friend to take a life-saving medication each day? Do you spend time helping a disabled neighbor with chores?

You may not realize it, but you are providing an important service: care. Caregiving helps a person in need. Helping others go to the doctor, bathe and dress, take medicine, clean, or eat are all types of caregiving.

Family members, friends, neighbors, or community members who provide help or care every day are recognized as informal caregivers. Informal caregivers may not think of themselves as caregivers. They are generally not paid.

Formal caregivers are paid for their time and caregiving services or are volunteers. These can be licensed health care providers or home care aides or companions. They deliver care in a person's home or in a residential care setting.

Whether it's formal or informal, caregiving helps people access life-saving medical, social, and other help.

Expanding families

Many people rely on informal caregivers, such as family members, as an affordable caregiving option.

Laura Gitlin, Ph.D., has been funded by NIH's National Institute on Aging (NIA) for various trials that test ways to support family caregivers and informal caregivers. Dr. Gitlin is dean of the College of Nursing and Health Professions at Drexel University in Philadelphia, Pennsylvania.

Dr. Gitlin and her colleagues are currently testing the Adult Day Service Plus program with 30 sites across the U.S. Funded by NIA, the study is evaluating whether a program that provides education, skills, and support to families using adult day care lowers nursing home placement and reduces caregiver distress.

"Most families provide exceptional care, but may not even realize their own efforts and all that they do," Dr. Gitlin said.

In 2011 alone, 18 million informal caregivers provided 1.3 billion hours of care on a monthly basis to Medicare beneficiaries age 65 and older, according to a joint report released recently by NIA.



The composition of families is also changing. Many family members have moved away from their hometowns, changing the way they provide support.

"Long distance caregiving is increasing. There are not enough family caregivers now and into the future to address all of the long-term care needs with people living longer," Dr. Gitlin said.

Long distance family caregivers participate in many important ways, including helping to schedule medical visits, providing financial support, and coordinating care.

Neighbors and community members also step in to help.

"The definition of family has expanded to include individuals beyond blood relatives such as neighbors and friends," Dr. Gitlin added.

Formal care options

Some formal caregivers help people in their homes. Others provide care in facilities like assisted living homes and nursing homes.

In addition to in-home and facility caregiving, Dr. Gitlin said people are finding other ways to access formal care.

Some, especially those in rural areas, use telehealth to connect with health care providers or health aides digitally from their own homes. Others use group caregiving services to help reduce costs.

In what's known as the "Village Movement," small

membership organizations bring communities of older people together, such as those in a neighborhood or apartment building. They pool financial resources to share important services, like home health care, handy work, and grocery delivery.

NIH research and resources

NIA spearheads research efforts aimed at identifying and addressing the unmet needs of people with Alzheimer's disease and related dementias and their caregivers. NIA supports formal and informal caregiving research.

"While research to date suggests that caregiving can lead to poor health outcomes, these connections are not well understood," said Elena Fazio, Ph.D., who helps lead NIA's caregiving research efforts. "Future research has the potential to show us factors that promote health and well-being of those providing care. The benefits as well as burdens of caregiving may change with time and illness progression. And the service and support needs of families and communities may shift," Dr. Fazio added.

Dr. Gitlin adds that researching how to help the caregiver is key for improving care for patients.

"It's important that family caregivers really consider how they can take care of themselves," Dr. Gitlin said. "That is equally as important as caring for the other person."

Dr. Gitlin notes that the costs of caregiving can impact families' options and plans too.

Choosing a caregiving path

Trying to decide if caregiving would be helpful for you or a family member?

NIA and MedlinePlus have articles on cognitive health, function, Alzheimer's disease, and dementia. Read about causes, signs, symptoms, and treatment options.

Wondering which caregiving situation is the right one for you? NIA and MedlinePlus have resources to help.

NIA features articles on long distance caregiving, choosing a nursing home, care options for patients with Alzheimer's and dementia, and caregiving payment and insurance options.

In addition, NIA has a helpful checklist on advance care planning. ■

Advance Care Plan: A Checklist for the Future

Do you and your loved ones have an advance care plan?

An advance care plan spells out decisions you'd like to make if you can't speak for yourself due to an illness or accident, based on your personal values, preferences, and discussions with family and loved ones.

A health care directive is a legal document that spells out these decisions and goes into effect only if you are unable to speak for yourself.

Making an advance care plan is especially helpful for older adults or those facing a terminal illness but is valuable for people at any age. The National Institute on Aging (NIA) encourages people to create an advance care plan and health care directive when healthy and able.

- Define your health care **power of attorney** or health proxy—a trusted family member, friend, or advisor who will make your health care decisions if you can't.
- Decide what kind of **end-of-life care** you are comfortable with.
- Write a **living will** and include all of your decisions on end-of-life care, and have it notarized.
- **Tell key family members** where you keep copies of your health care directive.



SOURCE: National Institute on Aging: Advance Care Checklist

Palliative Care: A Spectrum of Support

NIH researches care for seriously ill

When we think of caregiving, we often think of helping elderly family members or friends. But many people—old, young, and in between—rely on caregiving services.

Parents care for children with serious illnesses. Spouses care for their sick partners. People with long-term illnesses, like Alzheimer’s, multiple sclerosis, or cancer, may need part-time or full-time caregivers.

Defining palliative care

Palliative care is a resource for anyone living with a serious illness. Palliative care is comprehensive treatment of the discomfort, symptoms, and stress of serious illness. Its primary purpose is to relieve your pain and other symptoms and improve your quality of life. Palliative care focuses on the patient’s emotional and spiritual needs, and quality of life—and can be provided in the hospital, at outpatient clinics, or at home.

Palliative care is not the same as hospice or end-of-life care, which is for patients after treatment stops.

“We now define palliative care as care for people with serious illness,”

said Betty Ferrell, R.N., Ph.D. “The goal of palliative care is to offer comfort for the patient and support to the family.”

Dr. Ferrell is the director of the division of Nursing Research and Education at City of Hope National Medical Center in California. She works with NIH’s National Institute of Nursing Research (NINR), which leads palliative care research at NIH.

Expanding palliative care options

NINR and Dr. Ferrell are researching how to improve palliative caregiving for those in need.

Dr. Ferrell’s team studied how to best help lung cancer patients and their family caregivers in a recent study with the National Cancer Institute.

“While we’re assessing patients’ needs, we should also be assessing the family,” Dr. Ferrell said. “Our family caregiver intervention uses our quality of life model which is four dimensions of physical, psychological, social, and spiritual need.”

Her caregiver intervention tips include staying active, following a healthy diet, taking time to meditate and stay active, and talking to a financial advisor for budgeting help.

Another self-care tip? Make sure to see a health care provider regularly.

NINR coordinates research on end-of-life and palliative care with other institutes at NIH and around the country. In August 2017 the institute hosted a “Science of Caregiving” summit. It brought together researchers throughout the field to NIH’s main campus in Bethesda, Maryland.

Dr. Ferrell said caregiving research is essential to addressing the burden caregiving places on patients, families, and the public.

“The goal of palliative care is to offer comfort for the patient and support to the family.”

- Betty Ferrell, R.N., Ph.D.

“It’s easy for science to be focused on creating one more drug, or have one more clinical trial,” she said. “But there are some great champions who have really put caregiving on the agenda and have brought attention to family caregiving as a major public health concern.” ■

Pediatric Palliative Care Resources for You



Dealing with a serious illness can be overwhelming, especially when it involves a child.

NIH is here to help.

The National Institute of Nursing Research (NINR) offers pediatric palliative care resources to help you,

your family, and your health care provider through this difficult time. Pediatric palliative care is supportive care for children with serious illnesses and their families.

NINR’s resources are available online in English and Spanish and printed resources can be mailed to you for free.

- **Watch videos** or read stories from fellow families
- **Read tips** on finding support
- Learn how palliative care can help your child and family with **fact sheets**
- **Explore NIH research** and clinical trials

SOURCE: National Institute of Nursing Research: Pediatric Palliative Care

A Couple's Caregiving Journey

Husband and wife fight stage 3 throat cancer together

David Kaye never thought anything could hurt him. He spent 25 years in the Army as a Green Beret and served three tours of duty in Vietnam.

But after going to the doctor in 2010 with a sore throat that wouldn't go away, David was scared.

He was diagnosed with stage 3 throat cancer. Though he quit smoking a few years before that, David smoked cigarettes for almost 50 years.

"The next morning, I looked at my wife and said 'I don't have time for this. I'm gonna beat it,'" David said.

A long road ahead

Following surgery to remove the cancerous tumors, David faced an intensive recovery. For seven weeks, he received radiation twice a day and chemotherapy once a week.

David was always exhausted. He lost 102 pounds in only four months.

"I had no idea that the recovery was going to be so hard," he said.

David's wife, Marguerite, immediately stepped in to care for David. She drove him to and from treatment, gave him medication, and helped him bathe and dress.

Challenges of caregiving

While David dealt with the challenges of recovery, Marguerite dealt with the challenges of caregiving.

She dedicated most of her time to David's recovery and put her own needs aside. In addition to caring for David, she took on their daily chores and errands.

To help herself, she spoke to other caregivers about their experiences and took time for herself. She read books, practiced yoga in her room, and walked daily.



Marguerite and David Kaye on a recent vacation.

"I think we both learned a lot of things about each other we didn't know before that." - **David Kaye**

'It's OK'

David said having Marguerite by his side made all the difference during his recovery.

"I'm a pretty independent guy, so I like doing things for myself. But during treatment, I just couldn't," he said. "I think we both learned a lot of things about each other we didn't know before that."

Marguerite learned from her caregiving experience too. She wants other caregivers to know—it's OK. It's OK to feel impatient, or worn out, or even upset.

"From time to time you will feel overwhelmed and maybe a little angry at the situation," she said. "It's normal to feel that way."

Marguerite and David also stress the importance of self-care, something caregivers often forget.

"You can't take care of someone at your own expense every minute," Marguerite said. "You really need to fit things in for yourself where you can, even if it's just taking a nap." ■

Find Out More

- ▶ **MedlinePlus:**
<https://medlineplus.gov/caregivers.html>
- ▶ **National Institute on Aging:**
<https://www.nia.nih.gov/health/caregiving>
- ▶ **National Institute of Nursing Research:**
<https://www.ninr.nih.gov/>
- ▶ **NIH Clinical Center:**
<https://clinicalcenter.nih.gov/wecare/>

10 NIH Research Highlights

At any given time, NIH is funding thousands of research studies and clinical trials across the U.S. Some studies have developed easier and less expensive ways to test for viruses and cancer. Others are finding ways to improve the quality of life for patients with serious diseases such as multiple sclerosis and diabetes. The research supported by NIH strives to improve testing and treatments, help patients, and improve public health around the world. Take a look at 10 recent NIH-supported studies and what their findings could mean for you.



1 Study Shows Promise for Ebola Vaccines

Researchers have successfully tested two vaccines that appear to help block the deadly Ebola virus in humans. There are currently no approved drugs or protective vaccines for the virus, but early care can improve survival. The recent Ebola outbreak in West Africa provided an opportunity for researchers to test the two experimental vaccines for safety and effectiveness. Both vaccines seem to help fend off Ebola for a year, but more research is needed before they can be licensed.

The study was funded by the National Institute of Allergy and Infectious Diseases.



2

Testing an Artificial Pancreas for Type 1 Diabetes

New NIH research finds that an artificial pancreas system can control blood sugar in adults with type 1 diabetes better than conventional insulin pump therapy. The artificial pancreas system uses a continuous blood glucose monitor (CGM) and a smartphone app that wirelessly connects to a pump delivering insulin or glucagon based on input from the CGM. The app regulates the pump, which pushes the insulin or glucagon into the body through a thin tube. Currently, people with type 1 diabetes adjust their insulin based on carbohydrate counting and careful monitoring of blood sugar.

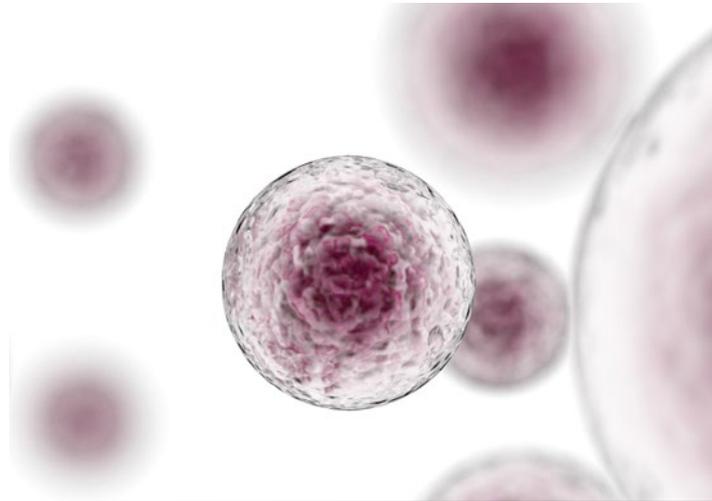
The study was funded by the National Institute of Diabetes and Digestive and Kidney Diseases.

3

Stem Cell Treatment May Help Some Multiple Sclerosis Patients

Experimental stem cell transplant therapy may hold promise for patients with a specific type of multiple sclerosis (MS). Patients who received the treatment did not experience a relapse of MS symptoms, progression of disability, or new brain lesions for five years. MS is an autoimmune disease that affects the central nervous system. The early findings suggest that high-dose immunosuppressive therapy followed by a one-time stem cell transplant derived from the person's own blood-forming stem cells may have a better success rate than current treatment options.

The study was funded by the National Institute of Allergy and Infectious Diseases.

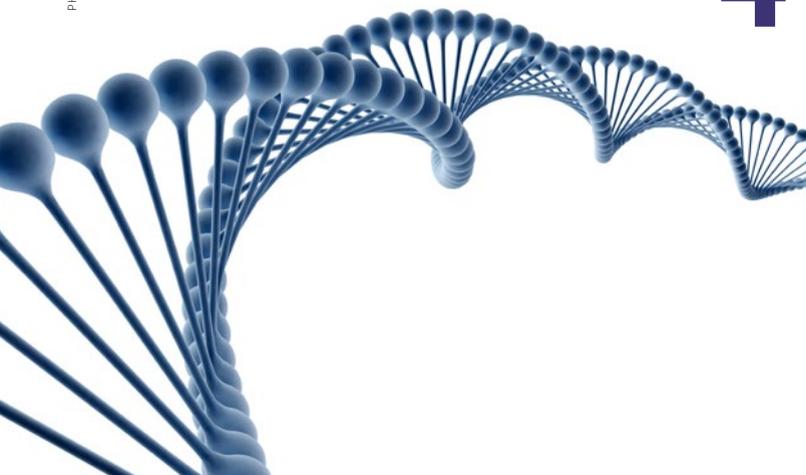


4

Quicker, Less Expensive Diagnostic Tests

NIH is developing new tools that can quickly detect small amounts of DNA. The technology behind the tools, CRISPR-Cas9, shows promise in many areas. It can help researchers find the Zika virus in our urine and saliva. One day it could help detect cancer mutations in blood. The technology could help quickly detect viral or bacterial infections during major outbreaks.

The study was funded in part by the National Institute of Allergy and Infectious Diseases and the National Institute of Mental Health.

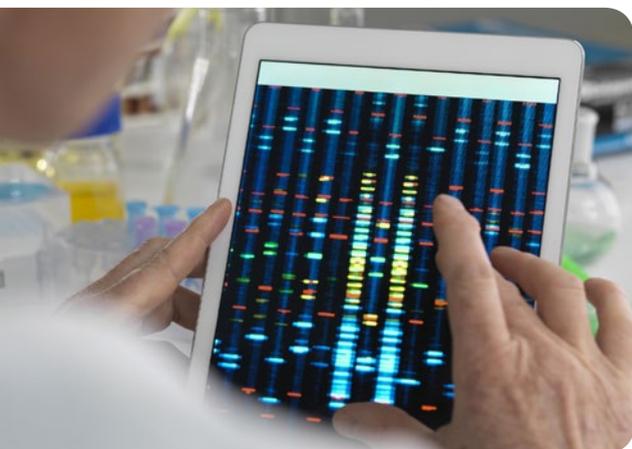


5

Blood Tests Help Predict Recovery Time for Sports Concussions

After athletes are sidelined by a concussion, they need time to recover. But for how long? Researchers are trying to find out. A recent NIH study found that athletes who needed longer recovery times had slightly higher levels of tau protein released into their blood. A structural component of brain cells, tau has also been linked to Alzheimer's and Parkinson's diseases. The study included both men and women who had suffered concussions from various sports, including football, soccer, basketball, and lacrosse. Researchers are hoping to incorporate this into a clinical strategy to better manage treatment for athletes who suffer a concussion.

The study was supported by the National Institute of Nursing Research and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development.



6

Genetic Testing Improves Blood Thinner Dosing

Blood thinners can prevent blood clots, which can cause heart attacks, strokes, and more. But taking blood thinners can also cause unwanted side effects. In some patients it can even lead to life-threatening bleeding. A new genetic test may help identify patients who are sensitive to a specific blood thinner: warfarin. It may also help develop better guidance on how much to give patients to maximize its effect and minimize any side effects.

The trial was funded by the National Heart, Lung, and Blood Institute.

7

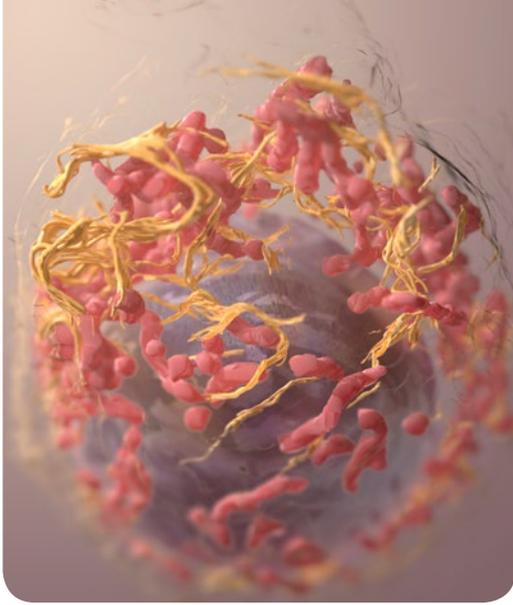
Prescribing Yoga for Low Back Pain?

Many of us have chronic low back pain. People from economically disadvantaged communities have even more back pain, according to researchers. New research studying these communities has found that certain yoga poses, practiced with a well-trained instructor, may help reduce chronic low back pain and improve movement. The study showed that a specially designed yoga class was just as effective as physical therapy for reducing pain and improving physical function.

The study was funded by the National Center for Complementary and Integrative Health.



PHOTOS: ADOBESTOCK, ISTOCK



3-D structure of a melanoma cell

8

New Approach to Surgery for Melanoma Patients?

Melanoma is the deadliest type of skin cancer. When treating melanoma that has spread from the skin to a nearby lymph node, surgeons usually remove both the cancerous lymph node and all nearby lymph nodes in case cancer cells may be there. But this can cause unwanted side effects. Researchers have found that for melanoma patients, removing all nearby lymph nodes may not extend life. Instead the researchers recommend that patients be monitored after surgery to remove a single node. More surgery can be done later, if needed.

The study was supported by the National Cancer Institute.

9

Changing Gut Bacteria in Inflammatory Bowel Disease Patients

As of 2015, more than 1 million adults in the U.S. were diagnosed with inflammatory bowel disease (IBD). IBD includes Crohn's disease and ulcerative colitis. These diseases cause inflammation in the digestive tract, along with serious pain and nutritional issues. IBD patients have an imbalance in the bacteria in their guts, according to new research. Experiments in mice suggested that future treatments that target this bacterial imbalance may help patients with IBD and other digestive conditions.

The study was supported by the National Institute of Diabetes and Digestive and Kidney Diseases and the National Institute of General Medical Sciences.



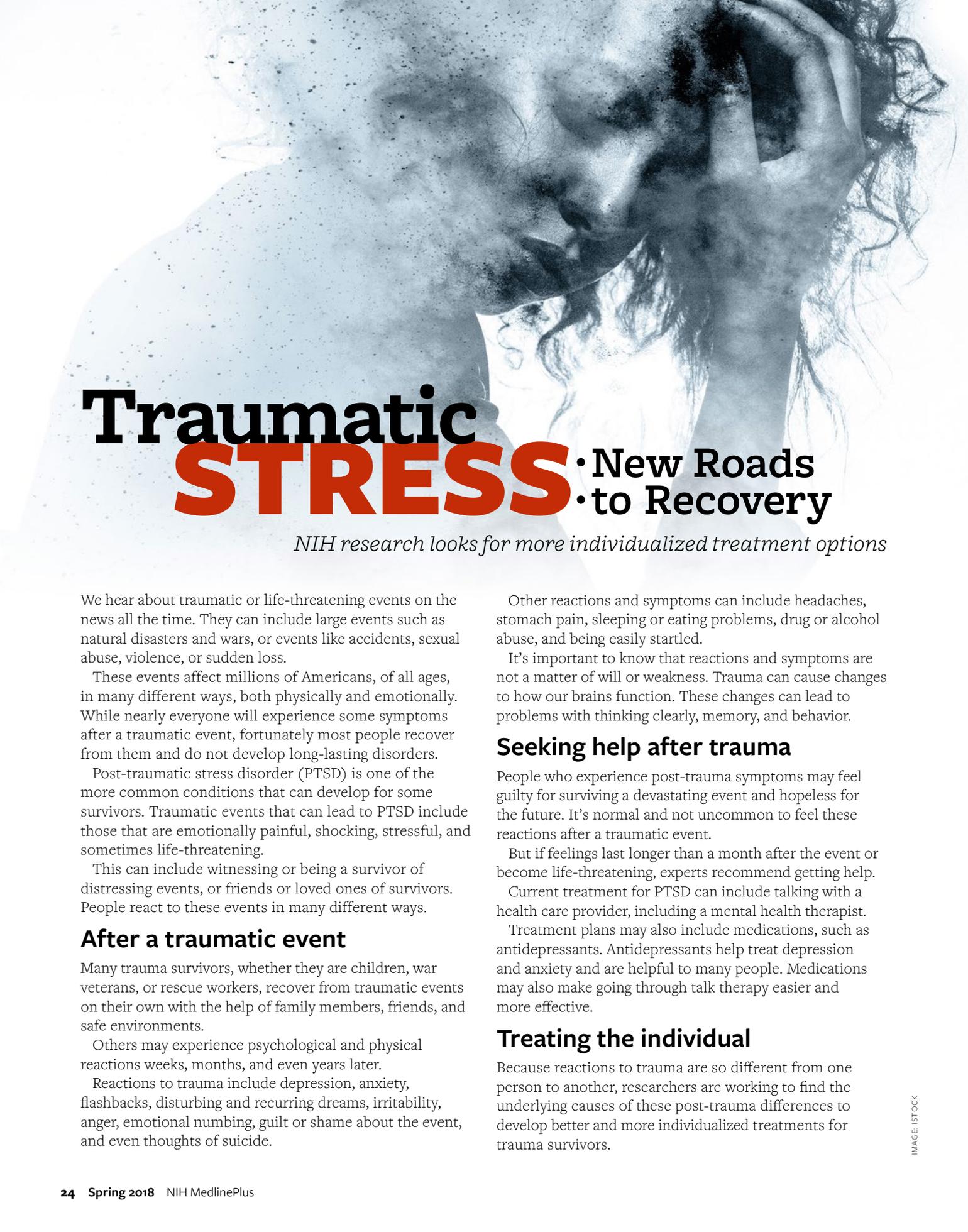
10

Addressing Teen Alcohol Use in American Indian Communities

Researchers have tested many ways to curb underage drinking. Ways that work for one racial or ethnic group may not work well in another. In American Indian teens, there are high rates of underage drinking. To study this community, NIH researchers tested prevention strategies in six communities within the Cherokee Nation. Two approaches showed promise for these communities. One was an intervention to mobilize the community to reduce teen drinking. Another intervention included one-on-one meetings with students and social workers to encourage healthy drinking behaviors.

The study was supported by the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Drug Abuse.





Traumatic **STRESS** • New Roads • to Recovery

NIH research looks for more individualized treatment options

We hear about traumatic or life-threatening events on the news all the time. They can include large events such as natural disasters and wars, or events like accidents, sexual abuse, violence, or sudden loss.

These events affect millions of Americans, of all ages, in many different ways, both physically and emotionally. While nearly everyone will experience some symptoms after a traumatic event, fortunately most people recover from them and do not develop long-lasting disorders.

Post-traumatic stress disorder (PTSD) is one of the more common conditions that can develop for some survivors. Traumatic events that can lead to PTSD include those that are emotionally painful, shocking, stressful, and sometimes life-threatening.

This can include witnessing or being a survivor of distressing events, or friends or loved ones of survivors. People react to these events in many different ways.

After a traumatic event

Many trauma survivors, whether they are children, war veterans, or rescue workers, recover from traumatic events on their own with the help of family members, friends, and safe environments.

Others may experience psychological and physical reactions weeks, months, and even years later.

Reactions to trauma include depression, anxiety, flashbacks, disturbing and recurring dreams, irritability, anger, emotional numbing, guilt or shame about the event, and even thoughts of suicide.

Other reactions and symptoms can include headaches, stomach pain, sleeping or eating problems, drug or alcohol abuse, and being easily startled.

It's important to know that reactions and symptoms are not a matter of will or weakness. Trauma can cause changes to how our brains function. These changes can lead to problems with thinking clearly, memory, and behavior.

Seeking help after trauma

People who experience post-trauma symptoms may feel guilty for surviving a devastating event and hopeless for the future. It's normal and not uncommon to feel these reactions after a traumatic event.

But if feelings last longer than a month after the event or become life-threatening, experts recommend getting help.

Current treatment for PTSD can include talking with a health care provider, including a mental health therapist.

Treatment plans may also include medications, such as antidepressants. Antidepressants help treat depression and anxiety and are helpful to many people. Medications may also make going through talk therapy easier and more effective.

Treating the individual

Because reactions to trauma are so different from one person to another, researchers are working to find the underlying causes of these post-trauma differences to develop better and more individualized treatments for trauma survivors.

“While we have interventions, treatments, and help for people, we’re not completely satisfied,” says Farris Tuma, Sc.D., chief of the National Institute of Mental Health’s (NIMH) Traumatic Stress Research Program.

“We are trying to understand individual needs and help each person individually instead of applying general therapies and medications to everyone who is struggling with PTSD.”

Dr. Tuma says that researchers from the University of North Carolina and Harvard University are studying 5,000 emergency room trauma patients. They are collecting many types of data, including patients’ symptoms, experiences, biology, and genetic information. The study, known as the AURORA study, was funded by NIMH.

The information collected will help researchers better understand what causes post-trauma disorders. It will also help them determine who will be affected by it in the future and how to best treat those in need.

“Everyone reacts differently to

trauma. There is no reliable way to predict who will recover without treatment and who will develop lasting problems after trauma,” Dr. Tuma says.

Dr. Tuma wants to learn what contributes to these issues so that mental health experts can better predict outcomes for people and treat them early and effectively.

Road to recovery

If you or a loved one has experienced a traumatic event, there are steps you can take to recover. (See our sidebar on page 26 for recovery information.)

Traumatic stress not only affects the survivor, but also those around him or her. Families, co-workers, and community members who have close contact with trauma survivors can be impacted as well.

Recovery can be long or short—each person is different.

It’s important for family members, friends, and colleagues to know how to support them.

With a better understanding and awareness of traumatic stress, those

“This is a story of hope. We have imperfect solutions today, but over time, we’ll be pushing the envelope with better treatments and possibly cures.”

- Farris Tuma, Sc.D.

close to survivors can handle situations better and help them get treatment.

“This is a story of hope,” Dr. Tuma says. “We have imperfect solutions today, but over time, we’ll be pushing the envelope with better treatments and possibly cures for trauma-related psychiatric problems, which is arguably something we should be able to prevent or cure.” ■

Depression, Guilt, Anger: Know the Signs of PTSD

People who experience traumatic situations react in different ways.

In general, people often have recurring thoughts about what happened. You may feel numb, have trouble relaxing, and try to avoid people and places that remind you of the trauma. Feeling vulnerable or on guard is also common. Other symptoms include:

Depression: Feeling sad most of the time or losing interest in activities that were once fun for you is a sign of depression. You may have low energy and be tired. You may think that things will never get better. This can lead to suicidal thoughts. If you are thinking of hurting or killing yourself, seek help immediately.

Self-blame, guilt, and shame: You may blame yourself after a traumatic event, especially if others are hurt. Feelings of guilt, shame, or self-blame are often not justified.

Anger or aggressive behavior: After trauma, you may think that what happened to you was unfair or unjust. This can result in intense anger. Intense feelings of anger and aggressive behavior can cause problems with those around you, with physical or legal consequences.

Alcohol/drug abuse: Drinking or “self-medicating” with drugs is a common but unhealthy way of coping with upsetting events. You may drink too much or use drugs to numb yourself. ■

SOURCES: MedlinePlus: PTSD ; National Institute of Mental Health: Coping with Traumatic Events



Recovery and Treatment

Not everyone who lives through a dangerous event develops post-traumatic stress disorder (PTSD). In fact, most people will not develop the disorder.

Knowing risk factors and resilience factors can help reduce risk, according to the National Institute of Mental Health. Resilience is the ability to bounce back and cope after difficult situations.

Risk factors:

- Dealing with extra stress after the event, such as loss of a loved one, pain and injury, or loss of a job or home
- Having little or no social support after the event
- Having a history of mental illness or substance abuse

Resilience factors:

- Seeking out support from other people, such as friends and family
- Finding a support group after a traumatic event
- Learning to feel good about your own actions in the face of danger
- Having a positive coping strategy or a way of getting through the bad event and learning from it

Treatment

The main treatments for PTSD are medications and psychotherapy (“talk” therapy) with a health care provider. Talk therapy teaches people ways to deal with frightening events, thoughts, and memories that trigger their symptoms.

To help yourself while in treatment:

- Talk with your health care provider about treatment options
- Engage in mild physical activity or exercise to help reduce stress
- Set realistic goals for yourself
- Tell others about things that may trigger symptoms

It is important for anyone with PTSD to be treated by an experienced mental health provider. Some people need to try different treatments to find what works for their symptoms.

If someone you know is talking about suicide following a traumatic event, you should take it seriously and ask them to get help. Call the Suicide Prevention Lifeline at 1-800-273-TALK (8255) or call 911. ■

SOURCES: The National Institute of Mental Health: Coping with Traumatic Events; Substance Abuse and Mental Health Services Administration: PTSD

Confronting 9/11 Trauma from Childhood into Adulthood

Survivor says early therapy was key to recovery



Brianna Parker has used therapy and self-care to deal with traumatic stress following 9/11.

Brianna Parker was across the street from the World Trade Center in New York on September 11, 2001, when two airplanes flew directly into the towers.

She remembers seeing adults covered with debris, screaming voices, sirens, and a burning smell. She also recalls the horror on the face of the “dust lady”—a debris-covered woman in distress who had made eye contact with Brianna and her mother.

Brianna was only four years old. While some people assume that a 4-year-old child may not remember such a traumatic event, Brianna remembers it vividly. She lived only

a few blocks away from the towers and attended preschool right across the street.

She and her mother had planned to go to the toy store located in the towers that day. Instead, they made their way across the Brooklyn Bridge, trying to escape the debris, smoke, and chaos of that horrible day. Brianna’s mother frantically tried to call friends and relatives.

Initially, Brianna had nightmares after 9/11.

“My mom had taken me to a therapist,” she says. “I remember playing board games with the therapist and playing with dolls. I built a tower with Legos.” Eventually her therapy ended when she was 8 or 9 years old.

Today she no longer has nightmares about 9/11. “I feel like I worked through a lot of that when I was younger. I still have anxiety, but I may have had that anyway,” she says.

Now, Brianna is 20-years-old and a junior in college.

Brianna finds that most kids her age don’t remember 9/11. When she sees other traumatic events in the news, she doesn’t associate them with her 9/11 trauma.

“When I was little, I always saw the ‘dust lady’s’ image. It was terrifying,” she recalls. “But now, I get news updates on my phone and hear about terrible events—and I don’t have the fears I used to have. I don’t need to know all the details.”

She attributes her recovery to having had years of therapy, beginning when she was very young.

Brianna’s advice to those who have been trauma victims: “For

small children and parents, getting therapy early is crucial. It helped me tremendously. If I hadn’t had therapy, it would have been much worse for me.”

Self-care and reaching out to others has also been helpful to Brianna throughout her recovery.

As for any anxiety she has from time to time, she keeps that under control by working out at the gym, doing breathing exercises, and practicing yoga. ■

“For small children and parents, getting therapy early is crucial. It helped me tremendously.”

- Brianna Parker

Find Out **More**

- ▶ **MedlinePlus:**
<https://medlineplus.gov/posttraumaticstressdisorder.html>
- ▶ **National Institute of Mental Health:**
<https://www.nimh.nih.gov>
- ▶ **Substance Abuse and Mental Health Services Administration:**
<https://www.samhsa.gov/>

from
the

lab

LATEST
RESEARCH
UPDATES
FROM NIH

CancerSEEK: Blood Test Could Detect Cancer Earlier

AN EARLY AND CORRECT cancer diagnosis gives patients the best chances for successful treatment.

One step toward an earlier diagnosis could be a new liquid biopsy called CancerSEEK.

CancerSEEK detects cancer from something we do all the time—giving a simple blood sample.

It tests both genetic and protein biomarkers in a patient's blood, which previous studies haven't done. Biomarkers, or biological markers, are in our blood, tissues, and other fluids. They can be tracked by health care providers to show if we have diseases like cancer.

NIH Director Francis Collins, M.D., Ph.D., wrote about the new technology, which is supported by NIH, in a recent blog post.

"CancerSEEK was able to detect most cases of eight different kinds of cancer, including some highly lethal forms that currently lack screening tests," Dr. Collins said.

The CancerSEEK trial tested breast, colorectal, esophagus, liver, lung, ovary, pancreas, and stomach cancers. These cancers are common in Western populations, including the U.S.

CancerSEEK detected 70 percent of the cancers tested but had greater sensitivity to later stage cancers—stages 3 and 4.

The next step for CancerSEEK?

Researchers need to see how well the blood test works in detecting cancer in people with no history of the disease. The study tested patients who had already been diagnosed.

The study was funded in part by NIH's National Cancer Institute (NCI) and the National Institute of General Medical Sciences (NIGMS). ■

SOURCES: NIH Research Matters: CancerSEEK; NIH Director's Blog: New Liquid Biopsy for Cancer; National Cancer Institute: Cancer Detection Research



IMAGE: ISTOCK



Brain Scan Technology Extends Treatment Window for Stroke

SOME STROKE PATIENTS

may be able to receive effective treatment later than originally thought—up to 16 hours after a stroke happens—thanks to brain imaging technology. But researchers emphasize that stroke is still an emergency.

A new NIH-supported study looked at treatment for ischemic stroke, which happens when one of our brain blood vessels is blocked. This cuts off oxygen and nutrients to our brains. These types of stroke make up 87 percent of all stroke cases.

The gold standard for stroke treatment for the past 20 years has been the delivery of a clot buster administered within 4.5 hours after a stroke.

More recent studies have shown success with endovascular treatments for ischemic strokes, which physically remove the brain blockage. But that therapy

had been approved for only up to six hours after the stroke.

In the new study, NIH-funded researchers found that in some stroke patients, brain tissue could still be saved as late as 16 hours after the stroke occurred. Researchers used a brain imaging technology—perfusion imaging with a special software called RAPID—to identify how much brain tissue could be saved.

This study expands the doctor's time window for treating a person suffering from a stroke.

However, all strokes require emergency treatment and you must recognize the urgency of seeking immediate medical help if you think you are having a stroke. ■

SOURCES: National Institute of Neurological Disorders and Stroke; Stroke Research; Centers for Disease Control and Prevention; Stroke; NIH StrokeNet

Eyes May be 'Windows to the Brain' in Stroke Patients

OUR EYES CAN TELL US A LOT about our health. They can help health care providers diagnose things like diabetes, genetic disorders, and cancer.

Our eyes may also help give insight into stroke, according to new research.

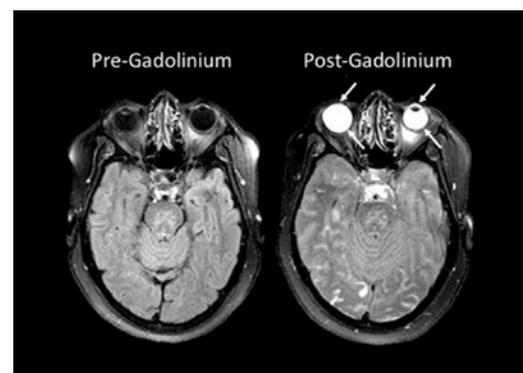
A team of NIH researchers found that a chemical called gadolinium given to stroke patients during brain scans can leak into their eyes. The gadolinium causes certain parts of the eyes to light up on these scans.

Gadolinium is a harmless chemical given to patients during magnetic resonance imaging (MRI) scans to highlight damage in the brain.

In healthy people, gadolinium remains in our bloodstream and is removed by our kidneys. But when someone has brain damage, it leaks into their brain, creating bright spots.

In the future, health care providers could give a similar substance to patients that would collect in their eyes and quickly tell them important information about their stroke—without the need for an MRI. ■

SOURCE: National Institute of Neurological Disorders and Stroke (NINDS): Stroke Research



Eyes of a stroke patient light up following an MRI with the chemical gadolinium.

NIH on the web

Tox Town: Spot Everyday Health Risks

➔ **WHAT ENVIRONMENTAL HEALTH RISKS ARE HIDING IN YOUR NEIGHBORHOOD?** The National Library of Medicine's Tox Town website provides animated scenes of different locations—like cities or coastal towns—and their environmental health concerns.

The website's fun, animated format allows you to search by chemicals or location. Tox Town also provides resources for teachers and people interested in environmental health careers.



Find it all in one place!
medlineplus.gov/magazine



Quit Smoking with Help from Smokefree.gov

➔ **IF YOU'RE LOOKING TO QUIT SMOKING**, the National Cancer Institute's Smokefree.gov online resources, information, and support can help.

Create your own "quit plan," download a free app, or sign up for a text message program to get 24/7 help.

Have a question you need an answer to quickly? Speak to a trained quit specialist at 1-800-QUIT-NOW or chat with them on the website using LiveHelp. Smokefree.gov is available in English and Spanish.

Stars Step Out for Women's Heart Health Awareness

➔ **GO RED FOR WOMEN'S HEART HEALTH!** Celebrities, designers, and survivors joined together for the American Heart Association's (AHA) 2018 "Go Red for Women" red dress runway event in New York.

The February event is part of "The Heart Truth®" campaign, launched in 2002 by NIH's National Heart, Lung, and Blood Institute and the AHA. The campaign brings awareness to heart disease in women. The disease is the number one killer of women in the U.S.



PHOTO TOP: ADOBE STOCK; PHOTO BOTTOM: NICHELLE S. LEWIS/NHLEI

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